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Commissioner for Patents
P.O. Box 1450
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APPEAL BRIEF

Dear Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal filed June 21, 2004. The following Appeal Brief is submitted pursuant to 35 C.F.R. § 1.192 for consideration by the Board of Appeals and Interferences.

1. Real Party in Interest

The real party in interest is Ixia.

2. Related Appeals and Interferences

There are no Appeals or Interferences which will affect or be affected by the outcome of this Appeal.

3. Status of the Claims

Claims 1-36 and 38-54 were rejected in the final Office action mailed 06/03/2004. Claim 37 was cancelled.

4. Status of the Amendments

There were no amendments after the final Office action.

5. Summary of the Invention

According to a first aspect of the invention, there is a method of determining a time delay for a round-trip transmission of data. The method includes receiving a first data packet comprising a first IP source address, a first IP destination address, a first TCP source port, a first TCP destination port, and a first time stamp indicating a first time when the first data packet was transmitted. The method further includes inserting the first IP destination address as a second IP source address in a second data packet. The method further includes inserting the first IP source address as a second IP destination address in the second data packet. The method further includes inserting the first TCP destination port as a second TCP source port in the second data packet. The method further includes inserting the first TCP source port as a second TCP destination port in the second data packet. The method further includes inserting the first time stamp as a second time stamp in the second data packet, wherein the second time stamp is for indicating a second time when the second data packet is transmitted. The method further includes transmitting the second data packet.

According to a second aspect of the invention, there is an electronic apparatus for determining a time delay for a round-trip transmission of data. The electronic apparatus includes an output memory portion for receiving a portion of an incoming data packet, the incoming data packet having a first source value for identifying a source of the incoming data packet, a first destination value for identifying a destination for the incoming data packet, and a first time stamp for indicating a time of transmission of the incoming data packet. The electronic apparatus further includes a data pattern management portion for managing an insertion of a data pattern into an outgoing data packet. The outgoing data packet has a second source value for identifying a source of the outgoing data packet, a second destination value for identifying a destination for the outgoing data packet, and a second time stamp for indicating a time of transmission of the outgoing data packet. The data pattern management portion is for managing the insertion of a data pattern into the outgoing data packet by (a) setting the second source value to be the first destination value, (b) setting the second destination value to be the first source value, (c) setting the second time stamp to be the first time stamp. The electronic apparatus further includes a header format portion for inserting the second source value, the second destination value and the second time stamp into the outgoing data packet.

According to a third aspect of the invention, there is a method of determining a time delay for a round-trip transmission of data. The method includes receiving a first data packet. The first data packet comprises a first source value, a first destination value, and a first time stamp indicating a first time when the first data packet was transmitted. The method further includes preparing a second data packet. The second data packet comprises a second source value, a second destination value and a second time stamp for indicating a second time when the second data packet is transmitted. The method further includes setting the first destination value as the second source value in the second data packet. The method further includes setting the first source value as the second destination value in the second data packet. The method further includes setting the first time stamp as the second time stamp in the second data packet. The method further includes transmitting the second data packet.

According to a fourth aspect of the invention, there is an apparatus for determining a time delay for a round-trip transmission of data. The apparatus includes means for receiving a first data packet. The first data packet comprises a first source value, a first destination value, a first time stamp indicating a first time when the first data packet was transmitted. The apparatus further includes means for preparing a second data packet comprising a second source value, a second destination value, a second time stamp for indicating a second time when the second data packet is transmitted. The apparatus further includes means for inserting the first destination value as the second source value in the second data packet. The apparatus further includes means for inserting the first source value as the second destination value in the second data packet. The apparatus further includes means for inserting the first time stamp as the second time stamp in the second data packet. The apparatus further includes means for transmitting the second data packet.

6. Issues Presented

The following issue is presented by this Appeal:

Are claims 1-29, 31-36 and 38-54 unpatentable under 35 U.S.C. § 103(a) over Link (U.S. Patent No. 6,012,096)?

Is claim 30 unpatentable under 35 U.S.C. § 103(a) over Link in view of Fletcher (U.S. Patent No. 6,321,264)?

7. Grouping of the Claims

We submit that the claims stand and fall together. Accordingly, the currently pending claims, claims 1-36 and 38-54 are to be considered as a single group.

8. Argument

Disclaimers Relating to Claim Interpretation and Prosecution History Estoppel

Any reference herein to "the invention" is intended to refer to the specific claim or claims being addressed herein. The claims of this Application are intended to stand on their own and are not to be read in light of the prosecution history of any related or unrelated patent or patent application. Furthermore, no arguments in any prosecution history relate to any claim in this Application, except for arguments specifically directed to the claim.

Overview of Cited References

(1) Link

Link is directed to measurement of peer-to-peer network latency in a networked gaming environment. Link discloses a sequence of three UDP packets for measuring latency between a local client and a remote client. The local client sends a UDP "ping packet" to the remote client. The ping packet includes a time stamp of its time of transmission. When the remote client receives the ping packet, the remote client forms a UDP "response packet" for transmission to the local client. The remote client includes a time stamp in the response packet to indicate the time of transmission. However, the remote client also includes the time stamp from the ping packet, essentially as payload data in the response packet: "the response packet includes the remote client's current timestamp along with the other timestamp, which is left intact." 5:23-25. Thus, the time stamp in the response packet shows its time of transmission, not the time of transmission of the ping packet. When the local client receives the response packet, it forms a UDP "response-response packet." Link defines the response-response packet as having two data fields – a first with the time stamp of the time of transmission from the response packet and a second with a latency calculation. The response-response packet does not have a time stamp for its time of transmission.

(2) Fletcher

Fletcher is directed to a system for measuring network performance, and performance of network-accessible applications. According to Fletcher, information about "request data packets" and "response data packets" is captured and stored, and statistics produced there from. In Fletcher, filters are used to select desired data packets for statistical analysis, and a set of rules are used to make the analysis. These rules include correlation rules, which are "defined to compare the destination and source addresses within request and response data packets as one method of establishing a correlation between request and response data packets." Column 11, lines 20-27. Thus, the relationship between a request data packet and a response data packet is defined by whether they have some matching criteria.

Rejection of Claims 1-29, 31-36 and 38-54 as Unpatentable over Link

The Examiner asserts that claims 1-29, 31-36 and 38-54 are unpatentable over Link. We disagree.

The invention of claim 1 is a method of determining a time delay for a round-trip transmission of data. Claim 1 recites first and second data packets which respectively include TCP source ports and TCP destination ports.

As explained above, Link is directed to measuring network delays using UDP packets. The examiner admitted that Link does not disclose, teach or suggest using TCP instead of UDP. However, the examiner concluded that because TCP has certain known benefits over UDP, that one of ordinary skill in the art would be motivated to modify Link to use TCP in the manner claimed. In reliance upon this motivation, the examiner cited to "Internetworking with TCP/IP Principles, Protocols, and Architectures" by Douglas E. Comer.[1] Certainly, the option of using TCP packets

[1] Notably, although the Examiner has extensively explored the issue of publication dates of the IXIA documents, he fails to provide a date of publication of Comer. Nor does he provide a publication date for the other non-patent references upon which he has cited. The undersigned therefore reserves the right to object to the Examiner's reliance upon these references, and asks that the Examiner provide a publication date. To be citable, this publication dates should be prior to 06/09/1999.

instead of UDP packets was available to Link. Thus, one must naturally ask why Link chose UDP instead of TCP. The two are not interchangeable. The clear answer is that Link either believed that UDP was better than TCP, or that it was impossible to substitute TCP for UDP. The fact that Link (a patent assigned to Microsoft) does not even disclose TCP packets can only be taken as a teaching away from TCP packets.

Even if one of ordinary skill in the art would be motivated (absent the hindsight of the Application) to modify Link to use TCP packets instead of UDP packets, there is still no basis for concluding that all of the claimed steps would be performed. The examiner did not even make a *prima facie* case that Link would have included:

> inserting the first TCP destination port as a second TCP source port in the second data packet;
>
> inserting the first TCP source port as a second TCP destination port in the second data packet;

Nor did the examiner explain how it would be obvious to modify Link to provide:

> a first data packet comprising . . . a first time stamp indicating a first time when the first data packet was transmitted
>
> inserting the first time stamp as a second time stamp in the second data packet, wherein the second time stamp is for indicating a second time when the second data packet is transmitted

Thus, the rejection of claim 1 for obvious is not well founded and should be reversed.

The invention of claim 31 is an electronic apparatus for determining a time delay for a round-trip transmission of data. The electronic apparatus includes "a data pattern management portion for managing an insertion of a data pattern into an outgoing data packet." One of the functions of the data pattern management portion is "setting the second time stamp to be the first time stamp." Claim 31 recites that "the first time stamp" is "for indicating a time of transmission of the incoming data packet. Claim 31 further recites that "the second time stamp" is "for indicating a time of

transmission of the outgoing data packet." This clever arrangement allows simpler implementation and faster processing than in designs such as Link's.

Although Link also uses time stamps to determine round trip delay, it is apparent that Link is quite different from the invention of claim 31. In particular, Link has no disclosure, teaching or suggestion of setting a transmission time of an outgoing data packet to be the transmission time of an incoming packet. Thus, Link does not set "the second time stamp to be the first time stamp" and does not anticipate or render obvious claim 31.

In rejecting claim 32, the examiner stated that Link discloses "a data validity portion for validating the incoming data packet." The examiner cited to "Figure 1 [blocks 53], 5 [blocks 80a]; column 4, lines 4-31; column 6, lines 19-33." None of these portions nor any other part of Link has any disclosure, teaching or suggestion of a data validity portion as claimed. The examiner has made a citation to generic portions of Link which are irrelevant to the limitation. It may be that the examiner wished to rely upon Link's disclosure of UDP packets as an inherent disclosure of the claimed "data validity portion." If so, then the examiner should have fully explained his inherency arguments, as explained in the Response filed 07/23/2003. Absent a proper rejection by the examiner, the rejection of claim 32 should be reversed.

In rejecting claims 34 and 54, the examiner stated that Link discloses that various portions "are located within a field-programmable gate array (Figure 1 [blocks 53]; column 4, lines 4-31)." Yet Link nowhere discloses, teaches or suggests anything about field-programmable gate arrays. In fact, Link does not even use the terms field-programmable gate array of FPGA at all. The rejection of claims 34 and 54 should therefore be reversed.

Claim 38 is independent and directed to a method of determining a time delay for a round-trip transmission of data. Claim 46 includes similar recitation as claim 38. Claim 46 is independent and directed to an apparatus for determining a time delay for a round-trip transmission of data. Claims 38 and 46 recite "a first time stamp indicating a first time when the first data packet was

transmitted;" "a second time stamp for indicating a second time when the second data packet is transmitted;" and "setting" or "means for inserting" "the first time stamp as the second time stamp in the second data packet." As explained above with respect to claim 31, Link has no disclosure, teaching or suggestion of these limitations. Thus, Link does not anticipate or render obvious claims 38 or 46 and the rejections should be reversed.

Claims 39 and 48 include limitations to "validating the first destination value." The examiner cited to Link's "Figures 2 [block 70], 3, 8 [block 802], 9 [block 922]; column 4, lines 66 to column 4, lines 12; column 6, lines 34-53." Neither these portions nor any other part of Link disclose, teach or suggest the claimed limitation. At most, Link discloses adding and removing IP addresses in an IP address table. Certainly, the mere acts of adding and removing does not include the act of validating. Thus, Link does not anticipate or render obvious claims 39 or 48 and the rejections should be reversed.

The Examiner rejected claims 3, 7-11, 22, 24 and 27 for reasons similar to his rejection of claims 39 and 48. One is left to wonder how the examiner could have concluded that Link discloses, teaches or suggests the limitations of these claims. Link has no disclosure, teaching or suggestion of any kind of validation, CRC checksums or other checksums. Link at column 6, lines 19-33, which the examiner seemed to rely upon for all of these rejections, is irrelevant. The examiner has not made a *prima facie* of obviousness. Thus, the rejection of claims 3, 7-11, 22, 24 and 27 should be reversed.

The examiner's rejection of claims 16-22, 24, 27, 35, 45 and 53 is mysterious. The examiner admitted that Link discloses only UDP. These claims include limitations to TCP flags. Link nowhere discloses, teaches or suggests TCP flags, yet the examiner relied solely upon Link for his conclusion that these limitations are obvious. To be sure, there is no basis for concluding that Link or the cited references motivate Link to be modified to include the claimed limitations. Thus, the rejection of claims 16-22, 24, 27, 35, 45 and 53 should be reversed.

Rejection of Claim 30 as Unpatentable over Link in view of Fletcher

The Examiner asserted that claim 30 is unpatentable over the combination of Link and Fletcher. We disagree.

The examiner's reliance upon Fletcher as disclosing the claimed features is incorrect, and the alleged motivation to combine is not relevant. For example, the examiner asserted that Fletcher discloses "checking a status of a first memory portion" in Figure 3, blocks 390, 295; Figure 5, block 525; Figure 7, block 730; column 8, lines 1-63; column 10, lines 57-64; and column 11, lines 31-67. None of these portions of Fletcher even relate to checking a status of a memory portion. Indeed, Fletcher nowhere even uses the term "check" or any variation. And, except for Fletcher's computer code section (to which the examiner did not refer), Fletcher nowhere uses the term status or any various, either. Nor did the examiner explain why it would have been obvious to modify Link to include these features. The "checking" step is just one example; claim 30 has other limitations which likewise are not disclosed, taught or suggested by Link or Fletcher. The examiner failed to make a *prima facie* case of obviousness. Thus, the rejection of claim 30 should be reversed.

CONCLUSION AND RELIEF

In view of the foregoing, it is believed that all claims patentably define the subject invention over the prior art of record and are in condition for allowance. We request that the Board overturn the rejection of all claims and hold that all of the claims of the above referenced application are allowable.

Respectfully submitted,

Date: July 8, 2004

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APPENDIX

The claims involved in this Appeal are as follows:

Claim 1: A method of determining a time delay for a round-trip transmission of data comprising:

receiving a first data packet comprising a first IP source address, a first IP destination address, a first TCP source port, a first TCP destination port, and a first time stamp indicating a first time when the first data packet was transmitted;

inserting the first IP destination address as a second IP source address in a second data packet;

inserting the first IP source address as a second IP destination address in the second data packet;

inserting the first TCP destination port as a second TCP source port in the second data packet;

inserting the first TCP source port as a second TCP destination port in the second data packet;

inserting the first time stamp as a second time stamp in the second data packet, wherein the second time stamp is for indicating a second time when the second data packet is transmitted; and

transmitting the second data packet.

Claim 2: The method of claim 1 further comprising:

transmitting the first data packet at the first time;

receiving the second data packet at a second time; and

determining a difference between the first time in the second time stamp and the second time to establish the time delay for the round-trip transmission of data.

Claim 3: The method of claim 1 further comprising:

validating the first IP destination address while receiving the first data packet, before inserting the first IP destination address, before inserting the first IP source address, before inserting the first TCP destination port, before inserting the first TCP source port, and before transmitting the second data packet; and

validating the first TCP destination port while receiving the first data packet, before inserting the first IP destination address, before inserting the first IP source address, before inserting the first TCP destination port, before inserting the first TCP source port, and before transmitting the second data packet.

Claim 4: The method of claim 1 wherein:

inserting the first IP destination address occurs while transmitting the second data packet; and

inserting the first IP source address occurs while transmitting the second data packet.

Claim 5: The method of claim 1 wherein:

inserting the first TCP destination port occurs while transmitting the second data packet; and

inserting the first TCP source port occurs while transmitting the second data packet.

Claim 6: The method of claim 1 wherein:

inserting the first time stamp occurs while transmitting the second data packet.

Claim 7: The method of claim 1 further comprising:

providing the first data packet further comprise a first IP checksum, a first TCP checksum, and a first CRC checksum;

validating the first IP checksum while receiving the first data packet;

validating the first TCP checksum while receiving the first data packet; and

validating the first CRC checksum.

Claim 8: The method of claim 7 further comprising:

storing the first IP source address and the first IP destination address before validating the first IP checksum; and

storing the first TCP source port and the first TCP destination port after validating the first IP checksum and before validating the first TCP checksum.

Claim 9: The method of claim 7 wherein:

validating the first TCP checksum occurs after validating the first IP checksum and before validating the first CRC checksum.

Claim 10: The method of claim 7 wherein:

validating the first CRC checksum occurs after receiving the first data packet.

Claim 11: The method of claim 7 further comprising:

determining a second IP checksum for the second data packet;

inserting the second IP checksum into the second data packet while transmitting the second data packet;

determining a second TCP checksum for the second data packet; and

inserting the second TCP checksum into the second data packet while transmitting the second data packet.

Claim 12: The method of claim 11 wherein:

inserting the first IP destination address occurs while transmitting the second data packet;

inserting the first IP source address occurs while transmitting the second data packet;

inserting the first TCP destination port occurs while transmitting the second data packet;

inserting the first TCP source port occurs while transmitting the second data packet; and

inserting the first time stamp occurs while transmitting the second data packet.

Claim 13: The method of claim 11 wherein:

inserting the first IP destination address occurs after inserting the second IP checksum;

inserting the first IP source address occurs after inserting the first IP destination address;

inserting the first TCP destination port occurs after inserting the first IP source address; and

inserting the first TCP source port occurs after inserting the first TCP destination port and before inserting the second TCP checksum.

Claim 14: The method of claim 1 further comprising:

providing the first data packet to further comprise a first data pattern; and

inserting a second data pattern into the second data packet.

Claim 15: The method of claim 14 wherein:

inserting the second data pattern occurs while transmitting the second data packet.

Claim 16: The method of claim 1 further comprising:

providing the first data packet to further comprise a first TCP flag; and

inserting the first TCP flag as a second TCP flag into the second data packet.

Claim 17: The method of claim 16 further comprising:

validating the first TCP flag while receiving the first data packet, before inserting the first IP destination address, before inserting the first IP source address, before inserting the first TCP destination port, before inserting the first TCP source port, before transmitting the second data packet, and before inserting the first TCP flag.

Claim 18: The method of claim 16 wherein:

inserting the second TCP flag occurs while transmitting the second data packet.

Claim 19: The method of claim 1 further comprising:

providing the first data packet to further comprise two TCP flags;

inserting the two TCP flags into the second data packet;

inserting an additional TCP flag into the second data packet, the additional TCP flag having a value of one; and

inserting three additional TCP flags into the second data packet, the three additional TCP flags each having a value of zero.

Claim 20: The method of claim 1 further comprising:

providing the first data packet to further comprising six TCP flags;

inserting two of the six TCP flags into the second data packet;

inserting an additional TCP flag into the second data packet, the additional TCP flag having a value of one; and

inserting three additional TCP flags into the second data packet, the three additional TCP flags each having a value of zero.

Claim 21: The method of claim 20 further comprising:

providing a FIN flag and a SYN flag for the two of the six TCP flags; and

providing an ACK flag for the additional TCP flag.

Claim 22: The method of claim 1 further comprising:

providing the first data packet to further comprise a first IP checksum, first TCP flags, a first TCP checksum, and a first CRC checksum;

validating the first IP checksum while receiving the first data packet;

validating the first TCP checksum while receiving the first data packet;

validating the first CRC checksum after receiving the first data packet;

determining a second IP checksum for the second data packet;

inserting and the second IP checksum into the second data packet while transmitting the second data packet;

inserting the first TCP flags as second TCP flags into the second data packet while transmitting the second data packet;

determining a second TCP checksum for the second data packet;

inserting the second TCP checksum into the second data packet while transmitting the second data packet;

determining a second CRC checksum for the second data packet; and

inserting the second CRC checksum into the second data packet while transmitting the second data packet.

Claim 23: The method of claim 22 wherein:

inserting the first IP destination address occurs while transmitting the second data packet;

inserting the first IP source address occurs while transmitting the second data packet;

inserting the first TCP destination port occurs while transmitting the second data packet;

inserting the first TCP source port occurs while transmitting the second data packet; and

inserting the first time stamp occurs while transmitting the second data packet.

Claim 24: The method of claim 23 wherein:

inserting the first IP destination address occurs after inserting the second IP checksum;

inserting the first IP source address occurs after inserting the first IP destination address;

inserting the first TCP destination port occurs after inserting the first IP source address;

inserting the first TCP source port occurs after inserting the first TCP destination port;

inserting the first TCP flags occurs after inserting the first TCP source port;

inserting the second TCP checksum occurs after inserting the first TCP flags;

inserting the first time stamp occur after inserting the second TCP checksum; and

inserting the second CRC checksum occurs after inserting the first time stamp.

Claim 25: The method of claim 24 further comprising:

providing the first data packet to further comprise a first data pattern; and

inserting a second data pattern into the second data packet while transmitting the second data packet.

Claim 26: The method of claim 25 further comprising:

transmitting the first data packet at the first time from a first electronic apparatus having the first IP source address and the first TCP source port;

receiving the second data packet at a second time and at the first electronic apparatus having the second IP destination address and the second TCP destination port; and

subtracting the first time in the second time stamp from the second time to determine the time delay for the round-trip transmission of data,

wherein:

receiving the first data packet further comprises receiving the first data packet at a second electronic apparatus having the first IP destination address and the first TCP destination port; and

transmitting the second data packet further comprises transmitting the second data packet from the second electronic apparatus having the second IP source address and the second TCP source port.

Claim 27: The method of claim 22 wherein:

inserting the first IP destination address occurs after inserting the second IP checksum;

inserting the first IP source address occurs after inserting the first IP destination address;

inserting the first TCP destination port occurs after inserting the first IP source address;

inserting the first TCP source port occurs after inserting the first TCP destination port;

inserting the first TCP flags occurs after inserting the first TCP source port;

inserting the second TCP checksum occurs after inserting the first TCP flags;

inserting the first time stamp occur after inserting the second TCP checksum; and

inserting the second CRC checksum occurs after inserting the first time stamp.

Claim 28: The method of claim 22 further comprising:

providing the first data packet to further comprise a first data pattern; and

inserting a second data pattern into the second data packet while transmitting the second data packet.

Claim 29: The method of claim 22 further comprising:

transmitting the first data packet at the first time from a first electronic apparatus having the first IP source address and the first TCP source port;

receiving the second data packet at a second time and at the first electronic apparatus having the second IP destination address and the second TCP destination port; and

subtracting the first time in the second time stamp from the second time to determine the time delay for the round-trip transmission of data,

wherein:

receiving the first data packet further comprises receiving the first data packet at a second electronic apparatus having the first IP destination address and the first TCP destination port; and

transmitting the second data packet further comprises transmitting the second data packet from the second electronic apparatus having the second IP source address and the second TCP source port.

Claim 30: The method of claim 1 further comprising:

waiting for the first data packet;

checking a status of a first memory portion;

storing a portion of the first data packet if the first memory portion is available, the portion of the first memory portion comprising the first IP source address, the first IP destination address, the first TCP source port, and the first TCP destination port;

checking a validity of the first data packet;

setting the status of the first memory portion to full if the first data packet is valid;

checking a status of a second memory portion;

transferring the portion of the first data packet from the first memory portion to the second memory portion if the second memory portion is available and if the first data packet is valid;

setting the status of the second memory portion to full; and

setting the status of the first memory portion to empty.

Claim 31: An electronic apparatus for determining a time delay for a round-trip transmission of data comprising:

an output memory portion for receiving a portion of an incoming data packet, the incoming data packet having a first source value for identifying a source of the incoming data packet, a first destination value for identifying a destination for the incoming data packet, and a first time stamp for indicating a time of transmission of the incoming data packet

a data pattern management portion for managing an insertion of a data pattern into an outgoing data packet, the outgoing data packet having a second source value for identifying a source of the outgoing data packet, a second destination value for identifying a destination for the outgoing data packet, and a second time stamp for indicating a time of transmission of the outgoing data packet, the data pattern management portion for managing the insertion of a data pattern into the outgoing data packet by

setting the second source value to be the first destination value

setting the second destination value to be the first source value

setting the second time stamp to be the first time stamp

a header format portion for inserting the second source value, the second destination value and the second time stamp into the outgoing data packet.

Claim 32: The electronic apparatus for determining a time delay for a round-trip transmission of data of claim 31 further comprising:

an incoming data portion comprising:

a data reception portion for receiving the incoming data packet;

an input memory portion for storing a portion of an incoming data packet;

a data validity portion for validating the incoming data packet;

an outgoing data portion comprising:

the output memory portion;

the data pattern management portion;

the header format portion;

a data transmission portion for transmitting the outgoing data packet.

Claim 33: The electronic apparatus for determining a time delay for a round-trip transmission of data of claim 31 wherein:

the first source value comprises a TCP source port for the incoming data packet

the first destination value comprises a TCP destination port for the incoming data packet

the second source value comprises a TCP source port for the outgoing data packet

the second destination value comprises a TCP destination port for the outgoing data packet.

Claim 34: The electronic apparatus for determining a time delay for a round-trip transmission of data of claim 31 wherein:

the input memory portion, the output memory portion, the header format portion, and the data pattern management portion are located within a field-programmable gate array.

Claim 35: The electronic apparatus for determining a time delay for a round-trip transmission of data of claim 31 wherein

the data pattern management portion is further for

selecting a first set of TCP flags from the incoming data packet

setting a second set of TCP flags to be the first set of TCP flags

the header format portion is further for inserting the second set of TCP flags into the outgoing data packet.

Claim 36: The electronic apparatus for determining a time delay for a round-trip transmission of data of claim 31 wherein:

the first source value comprises an IP source address for the incoming data packet

the first destination value comprises an IP destination address for the incoming data packet

the second source value comprises an IP source address for the outgoing data packet

the second destination value comprises an IP destination address for the outgoing data packet.

Claim 38: A method of determining a time delay for a round-trip transmission of data comprising:

receiving a first data packet, the first data packet comprising

a first source value

a first destination value

a first time stamp indicating a first time when the first data packet was transmitted

preparing a second data packet, the second data packet comprising

a second source value

a second destination value

a second time stamp for indicating a second time when the second data packet is transmitted

setting the first destination value as the second source value in the second data packet

setting the first source value as the second destination value in the second data packet

setting the first time stamp as the second time stamp in the second data packet

transmitting the second data packet.

Claim 39: The method of determining a time delay for a round-trip transmission of data of claim 38 further comprising validating the first destination value before inserting the first destination value, before inserting the first source value, and before transmitting the second data packet

Claim 40: The method of determining a time delay for a round-trip transmission of data of claim 38 further comprising:

transmitting the first data packet at a first time

receiving the second data packet at a second time

determining a difference between the first time in the second time stamp and the second time to establish the time delay for the round-trip transmission of data.

Claim 41: The method of determining a time delay for a round-trip transmission of data of claim 38 wherein

inserting the first destination value occurs while transmitting the second data packet

inserting the first source value occurs while transmitting the second data packet.

Claim 42: The method of determining a time delay for a round-trip transmission of data of claim 38 wherein inserting the first time stamp occurs while transmitting the second data packet.

Claim 43: The method of determining a time delay for a round-trip transmission of data of claim 38 further comprising

providing the first data packet to further comprise a first data pattern

inserting a second data pattern into the second data packet.

Claim 44: The method of determining a time delay for a round-trip transmission of data of claim 43 wherein inserting the second data pattern occurs while transmitting the second data packet.

Claim 45: The method of determining a time delay for a round-trip transmission of data of claim 38, wherein in the providing step, the first data packet further comprises a first TCP flag, the method further comprising inserting the first TCP flag as a second TCP flag into the second data packet.

Claim 46: An apparatus for determining a time delay for a round-trip transmission of data comprising:

means for receiving a first data packet, the first data packet comprising

a first source value

a first destination value

a first time stamp indicating a first time when the first data packet was transmitted

means for preparing a second data packet comprising a second source value, a second destination value, a second time stamp for indicating a second time when the second data packet is transmitted

means for inserting the first destination value as the second source value in the second data packet

means for inserting the first source value as the second destination value in the second data packet

means for inserting the first time stamp as the second time stamp in the second data packet

means for transmitting the second data packet.

Claim 47: The apparatus for determining a time delay for a round-trip transmission of data of claim 46 further comprising:

means for transmitting the first data packet at a first time

means for receiving the second data packet at a second time

means for determining a difference between the first time in the second time stamp and the second time to establish the time delay for the round-trip transmission of data.

Claim 48: The apparatus for determining a time delay for a round-trip transmission of data of claim 46 further comprising means for validating the first destination value while receiving the first data packet, before inserting the first destination value, before inserting the first source value, and before transmitting the second data packet

Claim 49: The apparatus for determining a time delay for a round-trip transmission of data of claim 46 wherein

the means for inserting the first destination value operates concurrently with the means for transmitting the second data packet

the means for inserting the first source value operates concurrently with the means for transmitting the second data packet.

Claim 50: The apparatus for determining a time delay for a round-trip transmission of data of claim 46 wherein the means for inserting the first time stamp operates concurrently with the means for transmitting the second data packet.

Claim 51: The apparatus for determining a time delay for a round-trip transmission of data of claim 46, wherein the first data packet further comprises a first data pattern, the method further comprising means for inserting a second data pattern into the second data packet.

Claim 52: The apparatus for determining a time delay for a round-trip transmission of data of claim 51 wherein the means for inserting the second data pattern operates concurrently with the means for transmitting the second data packet.

Claim 53: The apparatus for determining a time delay for a round-trip transmission of data of claim 46, wherein the first data packet further comprises a first TCP flag, the apparatus further comprising means for inserting the first TCP flag as a second TCP flag into the second data packet.

Claim 54: The apparatus for determining a time delay for a round-trip transmission of data of claim 46 comprising a field programmable gate array.